EMC²

EMC Departmental Switches DS-16M2 and DS-32M2

Installation Guide
P/N 014003063
REV A02

August 1, 2002

This document explains the power, cooling, weight, and rack placement requirements for the EMC departmental switches listed below. It also describes the kits available for mounting them in EMC and non-EMC racks and includes installation instructions as well.

Device	Device Model	Mounting Kit Model
16-Port Departmental Switch (2Gb)	DS-16M2-0D	DS16M-CRKH/CRKL
32-Port Departmental Switch (2Gb)	DS-32M2-0D	DS32M-CRKH/CRKL

Major sections are

Device Power, Cooling, and Weight Information

Device	Power Requirements	Cooling Requirements (Heat Dissipation)	Maximum Weight
DS-16M2 switch	Voltage: 100 to 230 V ac, 47 to 63 Hz 5 amperes max 2 ac power cords per unit	410 BTU/hr	11.8 kg (26 lb)
DS-32M2 switch	Voltage: 100 to 230 V ac, 47 to 63 Hz 5 amperes max 2 ac power cords per unit	836 BTU/hr	15.4 kg (34 lb)

Device Dimensions

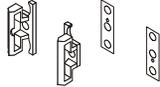| Device	Height		Depth		Width	
DS-16M2 Switch	1.0 U	1.7 in	4.3 cm	25 in	63.5 cm	17.5 in	44.5 cm
DS-32M2 Switch	1.5 U	2.55 in	6.47 cm	25.1 in	63.75 cm	17.5 in	44.5 cm

Device Placement Requirements

The DS-16M2 switches must be located at the top of the rack/cabinet, because the power cord routing for these switches runs across the top of the uppermost switch. There are no restrictions on the location of the DS-32M2 switches in the rack/cabinet.

Power distribution must support the number of outlets required for the switch and the switch power rating listed in the table on page 2.

Switch Mounting Kit (DS-16M or DS-32M)

The DS16- and DS32-**CRKH** kits contain the16- or 32-port standard switch rail mounting kits, and the DS16- and DS32-**CRKL** kits contain the 16- or 32-port low protrusion rail mounting kits.

Component		Use
2 mounting brackets - see illustration on page 17.		2 per switch
2 short rail assemblies (20.5 inches to 27 inches)- see illustration on page 6 or page 12 or 2 long rail assemblies (27 inches to 34 inches)- see illustration on page 6 or page 12		2 per switch
	#10 flat washer M5 kep nut	2 per rail assembly to secure adjustable rail to the "C" channel.
	6-32 x .31 screws	5 thread-forming screws per bracket to secure bracket to switch (10) **or** 5 non thread-forming screws per bracket to secure the bracket to the switch (10) **Note:** The kits include two (2) bags of 6-32 x .31 screws. Be sure to check the labeling on the bags and the chassis number label located on the back and bottom of the chassis to ensure that you use the correct screws for your chassis.
	M5 x 12 mm screws	4 per rail for DS-16M in round-hole channels (8) 3 per rail for DS-32M in round-hole channels (6)
	Square-hole washer M5 x 16 mm screws	4 per rail for DS-16M in square-hole channels (8) 3 per rail for DS-32M in square-hole channels (6)
	M3 x 8 mm screws	1 per bracket, used to secure brackets to the rails (2)

| Component		Use
	#10 washers ball studs	1 washer and 1 ball stud per rail to hold bezel (2) 39U bezel only
	Latch brackets and keyplate spacers	2 each to secure 1U bezel for 16M switch in 40U cabinets
	Left and right latch brackets	1 left and 1 right to secure 2U bezel for 32M switch in 40U cabinet
1U or 2U, low-profile or standard-profile bezel (front rack panel)		1 per switch
Two 7-foot USA power cords, straight C13 to N5-15P straight Two 6-foot IEC power cords, straight C13 to C14 straight		2 per switch (use the ones appropriate for your PDU)

Tools Required for Installation

You will need to have the following tools available to complete the installation of the rails and switch(es).

- ◆ # 1 Phillips head screwdriver
- ◆ 1/4-in. nut driver
- ◆ 5/16-in. nut driver

Installing the DS-16M and DS-32M Rails

This section describes the installation procedures for the DS-16M and DS-32M rails. The figures below show a front and rear view of four sets of rails installed in a 39U rack. Note that the rack is shown without the side skins.
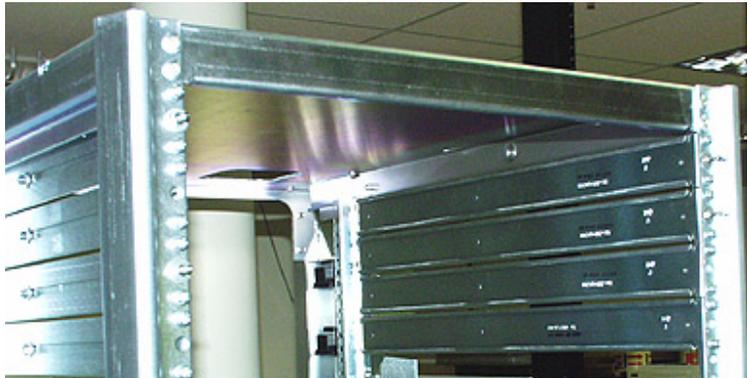

Front View

Rear View

DS-16M Rails Installation

There are two different length rails: The short rails range between 20.5 inches to 27 inches. The long rails range from 27 inches to 34 inches. Each kit contains two different length rear rail mounts. Use the rail length that is appropriate for your rack/cabinet.

Front

Rear

DS-16M Short Rails (for the CLARiiON Rack/Cabinet)

Front

Rear

DS-16M Long Rails (for 3rd Party Racks/Cabinets)

The front and rear flanges of the DS-16M rails have three screw holes. See the figure below.
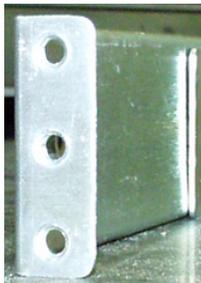
DS-16M Front Flange   **DS-16M Rear (u-shaped) Flange**

If you are installing both a DS-16M2 and DS-32M2 switch, the DS-16M2 should be positioned at the top of the rack/cabinet, located above the DS-32M2 switch.

Select the appropriate length rails, and follow the steps below to install them.

1. Assemble the rails.

   The rails assembly consists of an adjustable rail, a C channel, and two washers and kep nuts. See the figure below.
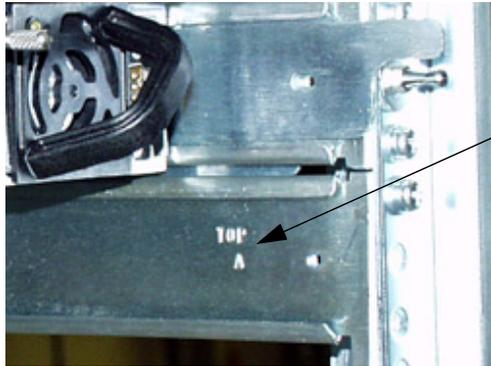

C channel

Adjustable rail

   a. Insert the threaded posts on the C channel into the slot on the adjustable rail.

   b. Secure the adjustable rail to the C channel with two #10 flat washers and M5 kep nuts. Leave the nuts finger tight.

Attach washers\nuts to threaded posts

2. Determine where in the rack/cabinet you are going to locate the switch.

   The left/right orientation of the rails is determined by the location of the word "top" on the C channel. The rail is oriented correctly when this word "top" is up and toward the rack/cabinet front. See the next figure.

"Top" up and to the
rack front

3. Adjust the length of the rail to fit between the channels in the
   rack/cabinet.

   NOTE: The rail flanges go to the *inside* of the channels.

4. Once the rails are adjusted to the correct length, tighten the kep
   nuts on the rail assembly.

   NOTE: If the side skins are removed on the rack/cabinet, you can tighten
   the kep nuts after you install the rails.

5. Align the holes of the front rail flange to the inside of the front
   channel. The top and bottom screw holes are used for the screws;
   the center screw hole is used for the ball stud or latch bracket.
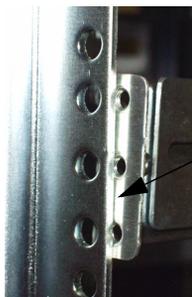
Flange to the inside
of the channel (rack front)

6. Secure the rail to a round-hole channel with 2 M5 x 12 mm
   pan-head screws (see the table on page 3), or secure the rail to a
   square-hole channel with 2 square-hole washers and

M5 x 16 mm flat head screws (see the table on page 3). Leave the screws finger-tight, and tighten them after the switch is installed. See the figure below.


**DS-16M Round-Hole
Channel, Rack Front
(for example, the
CLARiiON Rack/Cabinet)**

**DS-16M Square-Hole
Channel, Rack Front
(Third-Party Rack/Cabinet)**

If you are installing the switch in a 40U cabinet, install a keyplate spacer on the outside of the channel as you secure the rail to the front channel. The spacer is marked such that an L or an R will be upright when correctly installed on the left or right channel. See the figure below.


Switch
Mounting Rails

Spacer

Screw (2)

EMC2424
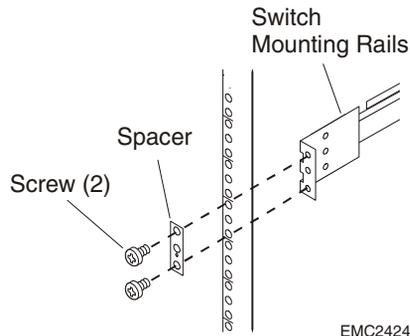
7. *If you are installing the switch in a 39U cabinet*, position the #10 washer and ball stud in the center hole, between the two M5 x 12 mm screws. Hand-tighten the ball stud.

   NOTE: The ball studs support the bezel.

   If you are installing the switch in a 40U cabinet, use an M5 x 12 mm screw to install the latch bracket in the center hole, over the keyplate spacer. See the figure below.

EMC2422
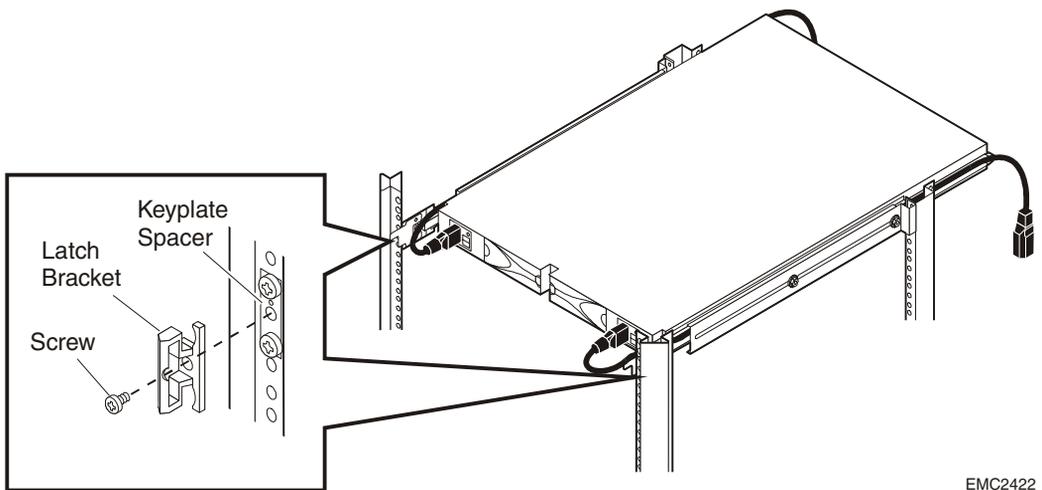
8. Align the holes in the rear, u-shaped flange of the rail with the holes in the rear inside channel.
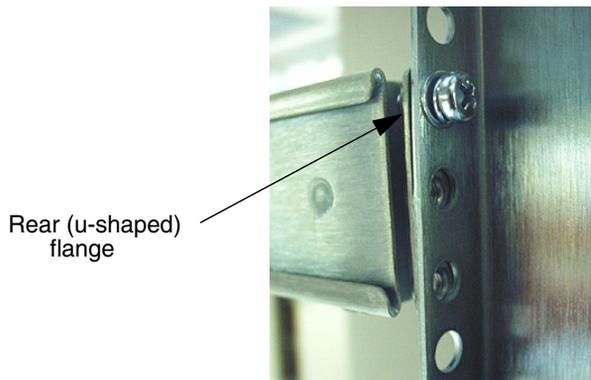
9. Secure the rail to a round-hole rear channel with 2 M5 x 12 mm pan-head screws (see the table on page 3), or secure the rail to a square-hole rear channel with 2 square-hole washers and M5 x 16 mm flat-head screws (see the table on page 3). Leave the screws finger-tight, and tighten them after the switch is installed. See the figures below.
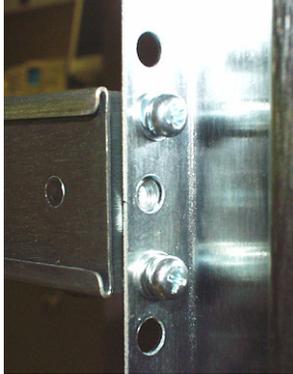
**DS-16M Round-Hole
Channel, Rack Rear
(for example,
CLARiiON Rack/Cabinet)**

**DS-16M Square-Hole
Channel, Rack Rear
(for example, Third Party
Rack/Cabinet)**

10. Repeat steps 1 through 9 for the other rail.

DS-32M Rails Installation

There are two different length rails: the short rails range from 20.5 inches to 27 inches. The long rails range from 27 inches to 34 inches. Each kit contains two different length rear rail mounts. Use the rail length that is appropriate for your rack/cabinet.

Front

**DS-32M Short Rails
(for the CLARiiON Rack/Cabinet)**

Rear

Front

**DS-32M Long Rails
(for 3rd Party Racks/Cabinets)**

Rear

The front and rear flanges of the DS-32M rails have four screw holes. See the figure below.

Front Flange

Rear Flange

NOTE: If you are installing both a DS-16M2 and DS-32M2 switch, the DS-16M2 should be positioned at the top of the rack/cabinet, located above the DS-32M2 switch.

Select the appropriate length rails, and follow the steps below to install them.

1. Assemble the rails.

   The rails assembly consists of an adjustable rail, a C channel, and two washers and nuts. See the figure below.
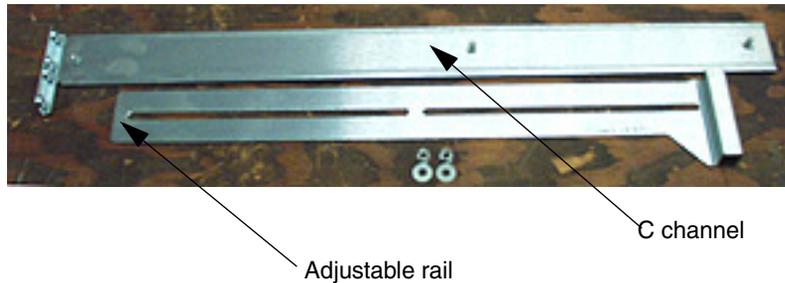
   C channel

   Adjustable rail

   a. Insert the threaded posts on the C channel into the slot on the adjustable rail.

   b. Secure the rail to the C channel with two #10 flat washers and M5 kep nuts. Leave the nuts finger-tight.

2. Determine where in the rack/cabinet you are going to locate the switch.

   The left/right orientation of the rails is determined by the location of the word "top" on the C channel. The rail is oriented correctly when the word "top" is up and toward the rack/cabinet front. See the figure below.
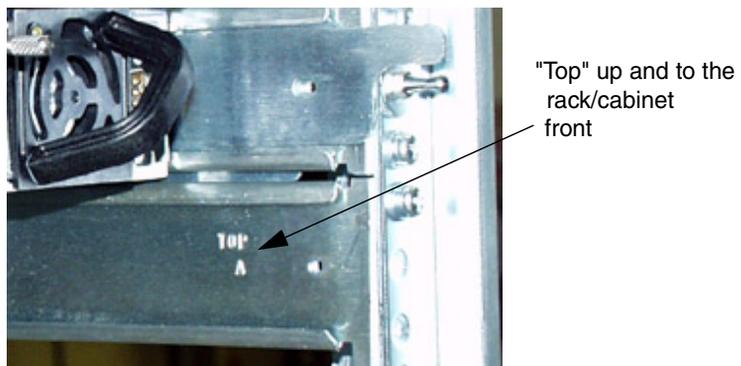
   "Top" up and to the rack/cabinet front

3. Adjust the length of the rail to fit between the channels in the rack/cabinet.

   NOTE: The rail flanges go to the *inside* of the channels.

4. Once the rails are adjusted to the correct length, tighten the kep nuts.

   NOTE: If the side skins are removed on the rack/cabinet, you can tighten the kep nuts after you install the rails.

5. Align two of the holes of the front rail flange to two holes on the inside of the front channel. The top screw hole is used for the screw; the bottom screw hole is used for the ball stud when installing in a 39U cabinet.

   Flange to the inside
   of the channel

6. *If you are installing a switch in a 39U cabinet*, secure the rail to a round-hole channel with one M5 x 12 mm pan-head screws and one #10 flat washer and ball stud (see the table on page 3), or secure the rail to a square-hole channel with one square-hole washer and M5 x 16 mm screw and one #10 flat washer and ball stud (see the table on page 3). Leave the screw and ball stud finger-tight. Tighten them after the switch is installed. See the figures below.

   NOTE: The ball studs support the bezel.

**DS-32M Round-Hole
Channel, Rack Front**

**DS-32M Square-Hole
Channel, Rack/Cabinet Front**

If you are installing the switch in a 40U cabinet, use the appropriate screws to install the latch bracket (instead of the ball stud) to the outside edge of the channel as you secure the rail. To attach the bottom latch bracket screw, install an M5 clip nut over the aligning hole in the channel. See the following figure.
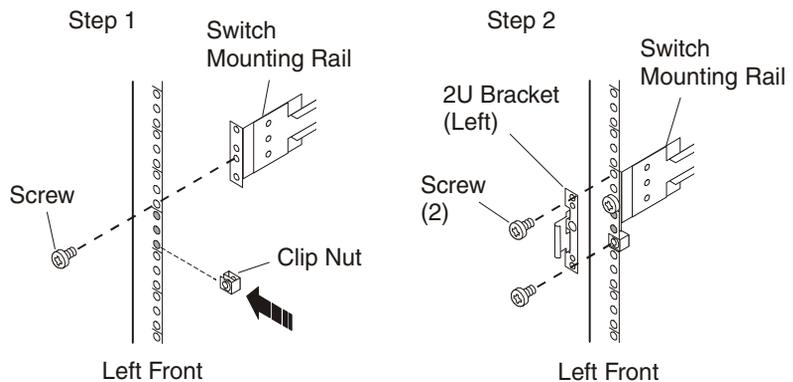
EMC2421

7. Align two holes in the rear, u-shaped flange of the rail with two holes in the rear inside channel.

8. Secure the rail to a round-hole rear channel with two M5 x 12 mm screws (see the table on page 3), or secure the rail to a square-hole rear channel with two square-hole washers and M5 x 16 mm screws (see the table on page 3). Leave the screws finger-tight, and tighten them after the switch is installed. See the figure below.

**DS-32M   Round-Hole
Channel, Rear**

**DS-32M Square-Hole
Channel, Rear**

9. Repeat steps 1 through 8 for the other rail.

Installing the DS-16M2 and DS-32M2 Switches

This section describes the procedures for installing the DS-16M2 and DS-32M2 switches in a rack/cabinet, including attaching the brackets on the switch. Both switches are installed in the rack/cabinet the same way. Note, however, that the DS-16M should be positioned at the top of the rack/cabinet, above the DS-32M.

Mounting Bracket Installation

NOTE: The mounting brackets are the same for both the DS-16M2 and DS-32M2.

You must attach mounting brackets to the switch before installing it on the rails. The mounting brackets slide into the C channel of the rails.

Follow the steps below to attach the mounting brackets to the switch.

1. Orient the L-shaped end of the bracket upward and to the fan end of the switch as shown in the figure below.

At the fan end of the switch

2. Place the bracket against the switch with the counter-sunk screw holes facing outward. Align the five screw holes in the bracket with the five screw holes on the side of the switch.

    To guarantee that all the screw holes in the bracket orient correctly with the screw holes in the switch, first align the bracket's middle screw hole with the middle screw hole in the switch.

⚠️ **CAUTION**

The kits include two (2) sets of screws. To avoid damaging the screw holes, be sure to check the labeling on the bags and use the appropriate set of screws for your chassis. The chassis product number is located on labels at the back and on the bottom of the chassis.

Align middle hole first

3. Secure the bracket with five 6-32 x .31 flat-head screws (see the table on page 3). Tighten the screws fully.

Fan end of switch
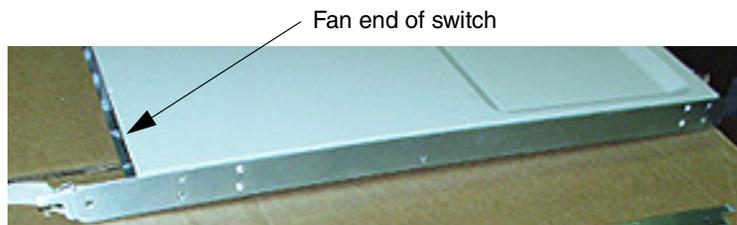
4. Repeat steps 1 through 3 above for the other side of the switch.

Installing the Switch in the Rack/Cabinet

Follow the steps below to install the switch in the rack/cabinet.

1. Lift and orient the switch so that the fan end is to the front of the rack/cabinet.

2. Align the bracket on each side of the switch with the C channel on each fixed rail.

3. Push the switch about 3/4 of the way into the rack/cabinet.

4. Tighten the rear screws securing the rails to the rear of the rack/cabinet.

5. Push the switch further into the rack/cabinet until the hole in the front part of each bracket (the "L"-shaped end) aligns with the hole on the fixed rail. See the figure below.

C channel

Align hole in bracket
with hole in the fixed rail
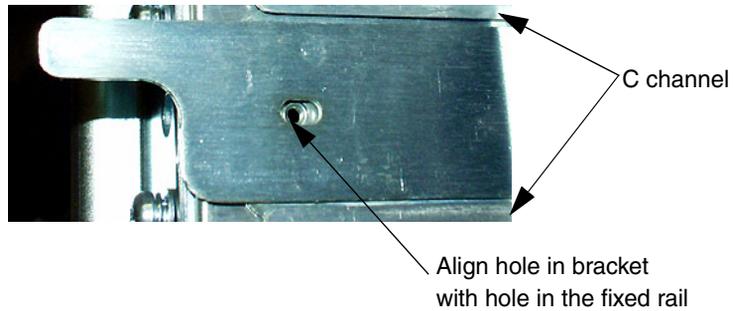
6. Tighten the front screws securing the rails to the front of the rack/cabinet.

7. Secure the brackets to the rails with two M3 x 8 mm pan-head screws (see the table on page 3), one on each side, as shown below.
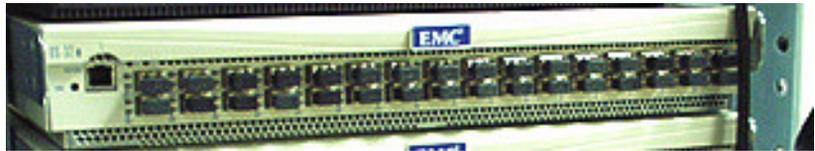
Front View of 32-port Switch Installed in a 39U Rack

Rear View of 32-port Switch Installed in a 39U Rack

8. Install the bezel by positioning and installing the bezel stud receptacles on the back of the bezel over the ball studs (39U rack) or latch brackets (40U rack) on the rail ends.

9. Push the bezel onto the ball studs or latch brackets until it snaps and locks into place. The illustration below shows an installed, unpainted 16-port bezel in a 39U rack.


10. Plug one of the supplied power cords into each of the switch's two power receptacles.

11. When installing the DS-16M2 switch, run the power cords up in front of the units and over the top of the uppermost switch.

> **NOTE:** There is a 3-inch space between the front of the switch and the back of the bezel. This is enough room to loop the cord up without pushing the bezel off.

12. When installing the DS-32M2 switch, the 2U spacing allows you to run the power cords between the switches.

13. Secure the power cords in the retainer clips, and route them down the trough along the edge of the rear of the rack. See the figures below.
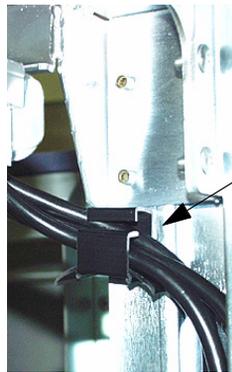
Secure cords with retainer clip
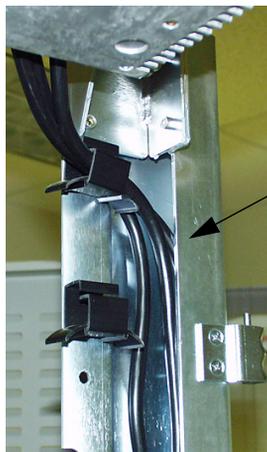
Run cables down trough

14. Plug the other end into available receptacles on the PDU.

⚠️ **CAUTION**

If you are removing the switches from the cabinet, you must remove the top switch from the back of the cabinet. You can remove all switches below the top switch from the front.

15. Attach the fibre-optic cables to the switch and run the cables from the switch to the appropriate device. Ensure each fibre-optic cable has a minimum bend radius of 2 inches.